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EMAIL REGARDING REGULATORY REVIEW AND COMMENTS ON HUMAN HEALTH RISK
ASSESSMENT OF DRAFT REMEDIAL INVESTIGATION REPORT FOR OPERABLE UNIT 2
(OU 2) WITH ATTACHMENT NTC ORLANDO FL

5/25/1999
TETRA TECH

McCoy, Steven

From: McCoy, Steven
Sent: Tuesday, May 25, 1999 3:26 PM
To: 'Dave Grabka'; 'Nancy Rodriguez'
Cc: 'Barbara Nwokike'; 'Wayne Hansel'; 'Rick Allen'; 'Alan Aikens'; Sparks, Barbara; Sinagoga, Leeann
Subject: OU 2 RI Report - Human Health Risk Assessment

David and Nancy:

Here are responses to comments provided by your risk assessors. Nancy, please note that we've requested that you provide us with a copy of the unpublished guidance document referred to in Comment #1. We'll need the document to finish addressing the comments.

If any of you on distribution need copies of the comments provided by FDEP and EPA, let me know and I'll email them to you.

Steve



FL-EPA Comment
Response .doc

SECTION 6 - HUMAN HEALTH RISK ASSESSMENT
DRAFT RI REPORT FOR OU 2
McCOY ANNEX LANDFILL – NTC, ORLANDO

RESPONSES TO FDEP COMMENTS:

Section 6.1 Data Evaluation

Response: Although the approach used for samples without detectable cPAHs was reasonably conservative, we will use half-detection limits for all cPAHs in samples without detectable cPAHs. We will revise the UCL calculations and the text on page 6-3 as necessary.

Section 6.3.3.1 Exposure Quantification/Site Maintenance Workers

Response: The use of 50 mg/day instead of 5 mg/day would not change the results of the risk assessment. The calculated carcinogenic risk and HQ to the site maintenance worker was 1.3×10^{-8} and 3.8×10^{-3} , respectively. If we use the 50 mg/day ingestion rate, we believe it would be appropriate to lower the fraction ingested to a value less than one. The canals contain water at times and exposure to sediments is reduced when sediments are under water.

Regarding the use of 0.1 fraction ingested for cPAHs in soil, we will provide further justification in the text, including discussion of unit of receptor exposure.

Section 6.5.1.2 Carcinogenic Risks for Areas 1 and 2/3

Response: We agree and will add text to discuss FDEP target risks.

U.S. EPA COMMENTS:

1. Risks from Benzo(a)Pyrene in Surface Water

Response: The dermal route of exposure was evaluated using the available published guidance [USEPA's *Dermal Exposure Assessment: Principles and Applications* (EPA/600/8-91/011B, January 1992, Interim Report)]. We are aware of the referenced Supplemental Guidance for Dermal Risk Assessment due to be published this year. (The document is currently labeled Peer Consultation

Workshop DRAFT.) Within the last several months we have received portions of the most current version of the Supplemental Guidance document, including some of the tables which present gastrointestinal and dermal absorption factors, courtesy of EPA Region I. We request a complete copy (including all critical appendices) of the document in order to consider and use the guidance detailed in the comment. However, please note that we have been advised in the past not to use the referenced guidance until published, or at least until the document has passed EPA peer review. Additionally, the limitations of the OU 2 HHRA methodology used to assess the dermal route of exposure for surface waters are already clearly acknowledged in the uncertainty section.

It appears that the $(1-B)^2$ term in the equation for b in the reviewer's comment is incorrect and produces incorrect results. In addition, we are unable to duplicate the results of the calculations in the comment using the equations and values provided. We assumed that the term $(1-B)^2$ in the equation for b should be $(1+B)^2$ to avoid having the square root of a negative number in the equation given for t^* . We calculate that t^* exceeds t_{event} , and no equation is provided for this condition in the comment. The DA_{event} formula provided in the comment is for the opposite condition (i.e., t_{event} exceeds t^*).

The value of 50% for the oral absorption efficiency for B(a)P was taken from) *Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment, Bulletin No. 2 Toxicity Assessment* (USEPA, 1995). This document provides 50% as the value for semi-volatile organic chemicals. We will, however, use the suggested 90% value. Please note the value in the comment is from the unpublished guidance referenced in the first paragraph of the response.

2. The Exposure Unit Concept

Response: We agree that the narrative should be improved to include a discussion of the exposure units with regard to the receptors evaluated. However, we believe that the exposure units defined are correct. Page 6-2 of the HHRA states "a review of soil and groundwater analytical results showed that the concentrations and chemical profiles for Area 1 appeared to differ from Areas 2 and 3." PAH concentrations were given as *one example* of the difference in concentrations, but the PAH concentrations were not the only reason for dividing OU 2 into two exposure units. Differences in other chemical concentrations and profiles of contamination were used as a basis for dividing OU 2 into two exposure units.

The division of a site into more than one exposure unit based, in part, on patterns of chemical concentrations has been accepted or required by EPA at many other sites [e.g., the Fernald DOE facility (Ohio, EPA Region 5); the Raymark Superfund Site (EPA Region I)]. Obviously, other factors are also

taken into account. We believe it is appropriate to divide a site in some cases, including OU 2, to prevent misrepresentation of the risk.

Because the site is a former landfill with an intended recreational reuse scenario, institutional controls (e.g., deed restrictions) are expected to be imposed as part of the OU 2 Record of Decision to prohibit future residential land use. There is, therefore, no need to divide the site into one-acre lots and recalculate the future residential land use scenario. The hypothetical future resident is included in the HHRA for purposes of completeness and to support deed restriction decisions.

3. Lead in Area 2/3 Groundwater

Response: We agree that is advisable to resample the groundwater with ultra-low flow techniques to determine more accurate lead levels.

4. Goodness of Fit Tests and Calculation of Upper Confidence Limits

Response: We assume that the reviewer is referring to text in Section 6.1 of the HHRA. Sentences from the text read as follows:

"Using the Shapiro-Wilk W-test (Gilbert, 1987), each data set was evaluated to determine if it fit a normal or lognormal distribution.... The normal 95 percent UCL was used if the Shapiro-Wilk test indicated a normal distribution.... Because the Shapiro-Wilk W test indicated the distribution was neither normally nor lognormally distributed..."

We agree that the Shapiro-Wilk test and other GOF tests merely fail to reject (or reject) the assumption of normality and will revise the text (Section 6 and appendices) to emphasize this point. However, the language presented in the text of Section 6 is similar to language commonly used, even in some of the guidance documents:

"The W-test (Gilbert, 1987) is one statistical method that can be used to determine if a data set is consistent with a normal or lognormal distribution." (USEPA, *Supplemental Guidance to RAGS: Calculating the Concentration Term*, Publication 9285.7-081, May 1992.

We will redo the HHRA assuming a lognormal distribution. The lesser of the 95% UCL and the maximum detected concentration will be used for the exposure point concentration (EPC).

5. Use of the Fraction Ingested Term

Response: We believe the use of the FI term of 0.1 for carcinogenic PAHs is appropriate for the HHRA of OU 2. The use of an FI term of 0.1 reflects the distribution of carcinogenic PAHs across OU 2 and a similar approach has been recommended for other EPA Region 4 sites. The same approach was used at the suggestion of EPA Region 4 to evaluate a recreational area at the Naval Base at Louisville. The approach was used, in part, because the statistics performed on the datasets for each exposure unit suggested that the maximum concentration should be used as the exposure point concentration. Based on the pattern of PAH contamination, this is overly conservative.

With regard to the exposure units, the most important receptors evaluated in this HHRA are the recreational user (e.g., the golfer) and the maintenance worker. (The hypothetical future resident is evaluated for purposes of completeness and to support, in part, the deed restrictions on land-use.) The exposure units defined for these receptors are considered appropriate because their activities are likely to bring them in contact with soils over a sizeable area (several acres).

6. Sediment Contact

Response: The sediments are often, but not always, covered by surface water. Sediment exposure was therefore included in the HHRA. We agree that the evaluation of sediment contact does not appreciably add to the risk assessment.

7. Need for an Additional Table

Response: Appendix E-9 provides the information requested and the table on page 6-41 provides a reference to the appropriate Appendix E-9 table. However, we will add a master summary table to summarize risks by receptor and identify significant risk drivers.